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Remarks

Claims 1-12, 27-37 and 44-48 are allowed. Applicant notes that the rejections are confusing because the language at page 4 of the July 11, 2003 Office action appears to indicate that claims 13, 38, 39, 41, 49 and 51 would be allowable if rewritten or amended to overcome the rejection under 35 U.S.C. § 112 and that claims 14-37, 40, 42, 43, 50, and 52 would be allowable if rewritten to overcome the rejections under 35 U.S.C. § 112 and to include all of the limitations of the base claim and any intervening claim. However, claims 49 and 51 also appear to stand rejected under 35 U.S.C. § 102(b) and claims 39-43 also appear to stand rejected under 35 U.S.C. § 103. Applicant respectfully requests clarification of the rejections and, if the next action is other than a Notice of Allowance, then either a nonfinal Office action or a final Office action that includes a response period of three months.

The Specification stands objected to under 35 U.S.C. § 132. Applicant submits that reference to a modified surface can be found in general throughout Applicant's Specification and in particular, for example a page 4, line 27 – page 5, line 4. For example, Applicant's Specification teaches, "The method of modifying the surface of a channel of a thermal barrier assembly includes exposing the surface of the channel to a plasma that includes metal moieties" (*Id.* at page 4, lines 27-31). Applicant's Specification further explains, "When the molten metal moieties from the plasma contact the surface of the channel they modify the surface by burning and welding to the channel surface" (*Id.* at page 4, line 30-page 5, line 1). Thus, the exposure of the channel surface to the plasma causes the surface of the channel to become modified. In addition, the presence of metal moieties in the plasma results in deposition of metal moieties onto the surface of the channel. Thus, the channel surface is both modified from its original state and provided with metal moieties. Applicant submits, therefore, that Applicant's Specification includes a written description of a channel that includes a modified surface. Accordingly, the objection under 35 U.S.C. § 132 is unwarranted and Applicant requests that it be withdrawn.

Claims 13-26, 38-43 and 49-52 stand rejected under 35 U.S.C. § 112, second paragraph.

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Claim 13 recites, "A thermal barrier assembly comprising a channel comprising a modified surface; and a layer of metal bonded to a surface of said channel." Claim 13 does not include the language "a modified surface layer," as suggested in the Office action. Rather, the actual language is "a modified surface." Applicant's Specification describes how a modified surface and a layer of metal can coexist in a thermal barrier assembly and how a modified surface and a layer of metal are achieved. See, e.g., *Id.*, page 4, line 27 – page 5, line 4. Therefore, the skilled artisan would understand that the channel includes a modified surface and a layer of metal. Applicant submits, therefore, that claim 13 is definite and respectfully requests that the rejection of claim 13 under 35 U.S.C. § 112, second paragraph, be withdrawn.

Claims 14-26, 38-43 and 49-52 are definite for at least the same reasons set forth above with respect to claim 13. Applicant submits, therefore, that the rejection of claims 14-26, 38-43 and 49-52 under 35 U.S.C. § 112, second paragraph, is unwarranted and request that it be withdrawn.

Claims 49 and 51 stand rejected under 35 U.S.C. § 102 over Liu et al. (U.S. 6,403,465).

Liu et al. disclose integrated circuits.

Claim 49 is directed to a thermal barrier assembly. Liu et al. do not teach a thermal barrier assembly. Rather, Liu et al. disclose an integrated circuit. An integrated circuit is not a thermal barrier. The Office action takes the position that Liu et al. et al. teach that copper forms a thermal barrier (Examiner's Answer, page 5, line 2). This position is untenable. The passage of Liu et al. referred to in the Office action to substantiate the rejection states, "Barrier layer (130) is next deposited over adhesion layer (120).... It is important that this protective material be selected from a group of materials... that will form a barrier to diffusion of copper" (Liu et al., col. 6, lines 10-14). Nothing in this passage teaches that the barrier layer 130 of Liu et al. is a thermal barrier layer. Moreover, contrary to the Examiner's assertions in the Office action, Liu et al. do not teach that copper diffusion is considered under thermal conditions (see Examiner's Answer, page 4, paragraph 11). Rather, Liu et al. actually disclose, "[T]he deposition is performed in an environment where the pressure is between about 1 to 10000 mtorr, and temperature between about 20 to 450°C" (Liu et al., col. 6, lines 19-23). Thus, the

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passage cited by the Office action in support of the rejection refers to conditions for depositing the barrier layer --not conditions for testing. Nothing in the cited passage, or anywhere in Liu et al., teaches a thermal barrier assembly. Thus, it has not been established that Liu et al. teach a thermal barrier assembly. Accordingly, the rejection of claim 49 under 35 U.S.C. § 102(b) over Liu et al. cannot stand and Applicant requests that it be withdrawn.

Claim 51 is directed to a casing. Liu et al. do not teach a casing. Since Liu et al. lack a required element of claim 51, the rejection of claim 51 under 35 U.S.C. § 102(b) cannot stand and Applicant requests that it be withdrawn.

Claims 39-43 stand rejected under 35 U.S.C. § 103 over Liu et al.

Claim 39 is directed to a thermal barrier assembly including a channel that includes a modified surface including a layer of metal bonded to a surface of the channel, the metal having been deposited onto the channel surface from a plasma, and an adhesive composition bonded to the modified surface of the channel, the adhesive composition exhibiting no greater than 5 % shrinkage when bonded to the surface and subjected to the % Shrinkage Test Method. Liu et al. do not teach a thermal barrier. Instead Liu et al. disclose an integrated circuit. The Office action takes the position that Liu et al. teach that copper forms a thermal barrier (Examiner's Answer, page 5, line 2). As demonstrated above, this position is untenable. Since Liu et al. do not teach a thermal barrier, a basic premise on which the rejection of claim 39 under 35 U.S.C. § 103 over Liu et al. is based has been refuted. Accordingly, the rejection of claim 39 under 35 U.S.C. § 103 over Liu et al. cannot stand and must be withdrawn.

Applicant submits that claims 40-43 are distinguishable under 35 U.S.C. § 103 over Liu et al. for at least the same reasons set forth above in distinguishing claim 39, and requests that the rejection of claims 40-43 under 35 U.S.C. § 103 over Liu et al. be withdrawn.